

Central Valley Flood Protection Plan

Round 1 Management Action Workshops

Draft Initial Management Actions

A management action is a specific structural or nonstructural strategy, action, or tactic that contributes to the Central Valley Flood Protection Plan (CVFPP) goals and addresses identified flood management problems in the Systemwide Planning Area, including any identified deficiencies in the State Plan of Flood Control (refer to *CVFPP Interim Progress Summary No. 1*). Management actions may range from potential policy or institutional changes, to recommendations for operational and physical changes to the flood management system. Management actions may address one or more CVFPP goals and are the “building blocks” for regional solutions and eventually systemwide solutions.

An initial set of management actions was developed by consolidating a large number of compiled actions and recommendations from published studies and reports, and input from Regional Conditions and Topic Work Groups during CVFPP Phase 1 activities. DWR subject-matter experts provided a preliminary evaluation of the environmental, economic, technical, and social consideration of the identified management actions. Each management action was evaluated against a uniform set of criteria to allow for a consistent comparative analysis.

Management Actions Workshops will refine the initial management actions and develop additional actions to augment this initial set of management actions. For information on Phase 2 Workshops, refer to *Attendee’s Guide to Phase 2 Workshops* available at www.water.ca.gov/cvfmp/.

Each management action is evaluated using the *Management Actions Evaluation Form*. For description of the form sections refer to the *Reader’s Guide to the Management Actions Evaluation Form* available at www.water.ca.gov/cvfmp/.

To provide detailed written comments on the management action description and evaluation, use the fillable PDF *Comments Form* available at www.water.ca.gov/cvfmp/.

Draft Flood Fighting, Emergency Response & Flood Recovery Management Actions

ID	Management Actions Title
MA-069	Protect critical infrastructure corridors from flood waters.
MA-070	Expand the State's assistance to LMAs during flood emergencies.
MA-071	Improve evacuation planning.
MA-072	Develop a post-flood recovery plan for the Central Valley and Delta to improve the coordination and efficiency of post-flood public assistance.
MA-073	Streamline the post-flood permitting process for flood system repairs.
MA-081	Purchase and position flood fighting materials in preparation for a flood event.

DRAFT Management Action Evaluation

Management Action Title:

MA-069

Protect critical infrastructure corridors from flood waters.

Description:

Problem:

In many Central Valley communities, the infrastructure needed to facilitate the flow of resources into, or evacuees out of, a flooded area would be impacted or incapacitated in the event of a flood. Critical infrastructure includes transportation corridors (highways, roadways), power lines, railroads, gas lines, water supply treatment and distribution facilities (aqueducts, pumping stations), and others. For example, under various flood scenarios in the City of Sacramento, most transportation infrastructure (major highways, egress routes, lightrail, and Sacramento International Airport) would be partially or completely inundated during a large flood event or levee failure. This could hinder the orderly and timely evacuation of people, and impede access by emergency response personnel engaging in flood fighting, evacuation, or other emergency aid functions. In other areas, even if communities are not flooded they could become isolated if transportation corridors are flooded, posing public safety risks. Flooded transportation corridors could also impede the restoration of lifeline utility infrastructure (water, power, sewer, etc).

Desired Outcome:

Facilitate effective emergency response and recovery by protecting critical public infrastructure from flood waters.

Methodology:

The method for protecting critical infrastucture would vary depending upon the size and type of infrastructure, ownership (a high percentage of infrastructure is privately owned), location, and characteristics of the flood (depth, rapidity, velocity, time for floodwaters to recede). For example, vital transportation corridors (highways or railroads) could be protected by embankments or by elevation above flood waters. In another example, pumping stations for sewer or water utilities could be flood proofed and equipped with on-site backup power generators. Implementation should consider prioritization of infrastructure to be protected, both regionally and within individual communities, to maximize benefits and cost effectiveness.

CVFPP Goals

Contributes Significantly to:

Improve Institutional Support

Potentially Contributes to (Check all that apply):

- ☒ Improve Flood Risk Management
- ☒ Improve Institutional Support
- ☐ Improve Operation and Maintenance
- ☐ Promote Multi-Benefit Projects
- ☐ Promote Ecosystem Functions

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation.

Advantages:

- Increases public safety.
- Improves evacuation/egress and emergency response during flood events.
- Reduces post-flood recovery time.

Disadvantages:

- High capital cost.
- Impacts would vary depending on type of infrastructure.

Economic Considerations:

Capital Cost? (High, Medium, Low)

High initial investment

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

Little or no change to O&M costs

Potential for Cost-Sharing?

Uncertain potential for Federal cost sharing via contributions to existing Federal water resources project purposes (flood management), but existing Federal programs (FEMA's Hazard Mitigation Grants Program and the National Disaster Assistance Act) may provide funding sources

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

Potential to reduce long-term costs for flood recovery through reduction in damage to infrastructure (transportation, power, water)

Flood fighting? (Increase, Decrease, or No Significant Change)

No change to flood fighting costs

Effect on Damage to Critical Public Infrastructure?

Directly reduces potential flood damage to critical public infrastructure

Effect on Floodplain and Economic Development?

No direct effects to floodplain development; potential to speed regional economic recovery after a flood event

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Potential to reduce State liability through reduction in damage to public and private infrastructure and improvement in ability to respond to floods (evacuation, emergency access, recovery)

Environmental Considerations:

Rehabilitate key physical processes and ecological functions?

None

Adverse Environmental Impact?

Site-specific, but potential substantial permanent impacts to terrestrial and potentially wetland and riparian habitats, including loss of habitat for special-status species

Permitting Considerations?

Extensive and complex

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:

Public Safety?

Potential to increase public safety by keeping transportation routes open for emergency response, evacuation, and recover during and immediately after a flood event, and protecting other infrastructure necessary for timely flood recovery (water, power, gas, etc)

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

None

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

Implementability would depend on size and type of infrastructure, ownership (federal, state, local), cost, and potential construction impacts (economic, social)

Technical Considerations:

Redirected Hydraulic Impacts?

No redirected hydraulic impacts

Residual Risk?

Reduces residual risks of flooding by preventing damage to critical infrastructure and speeding post-flood recovery

Climate Change Adaptability:

This action is unrelated to hydrologic and biological adaptability

Urban, Small Community, and Non-Urban Considerations:

Potential applicability in a variety of urban and small community environments

Regional Applicability:

Applicable in all regions where critical infrastructure and major transportation routes could be affected by flood waters

Integration with Other Programs:

Planning efforts should be coordinated/integrated with local and regional public safety plans (evacuation, mass care and shelter, medical response, post-disaster recovery, etc.); potential opportunities for implementation or funding through California Disaster Assistance Act, FEMA's Hazard Mitigation Grants Program or federal Natural Disaster Assistance Act, and/or insurance companies (to minimize insured losses).

References:

Delta Risk Management Strategy

DRAFT Management Action Evaluation**Management Action Title:**

MA-070

Expand the State's assistance to LMAs during flood emergencies.

Description:*Problem:*

Funding available to finance O&M, repairs, and flood fighting varies widely across levee maintaining agencies, and many have a limited ability to raise funds (particularly during emergencies). For example, flood fight responders must often seek assistance or funding for rock, supplies, and technical expertise from the next level of local, State, or federal jurisdiction. Most available State and federal funding sources related to floods are aimed at reducing risk and potential damages in advance of a flood or reimbursing the appropriate jurisdiction for eligible emergency response work—not at helping finance operations during flood fights.

Desired Outcome:

Improve levee maintaining agencies' ability to quickly raise funds when a floods or other threats to levee stability are imminent.

Methodology:

Create a public loan guarantee program that would promise to assume maintenance districts' debts from loans obtained to help finance floodflights in the event that districts cannot repay them. This would allow even very small RDs and LDs to purchase the resources and expertise needed to help hold back floodwaters. There are also existing programs through Cal EMA and FEMA.

CVFPP Goals*Contributes Significantly to:*

Improve Institutional Support

Potentially Contributes to (Check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Improve Flood Risk Management | <input checked="" type="checkbox"/> Improve Institutional Support |
| <input type="checkbox"/> Improve Operation and Maintenance | <input type="checkbox"/> Promote Multi-Benefit Projects |
| <input type="checkbox"/> Promote Ecosystem Functions | |

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation

Advantages:

- Directly benefits agencies responsible for maintaining flood management facilities.

Disadvantages:

- Sustainable funding source would need to be identified.

Economic Considerations:*Capital Cost? (High, Medium, Low)*

Low to high cost to implement, depending on type and magnitude of program

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

O&M costs would not change

Potential for Cost-Sharing?

Could increase State cost sharing in emergency management

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

Could improve emergency response activities at local level

Flood fighting? (Increase, Decrease, or No Significant Change)

Could improve local agencies' ability to flood fight and conduct emergency activities

Effect on Damage to Critical Public Infrastructure?

Could minimize public infrastructure damage during disaster events.

Effect on Floodplain and Economic Development?

No direct effects

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Could reduce State responsibility that may result from flooding.

Environmental Considerations:*Rehabilitate key physical processes and ecological functions?*

None

Adverse Environmental Impact?

None

Permitting Considerations?

None

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:*Public Safety?*

No direct effects, but increased funding for improvements would result in a flood management system that provides greater public safety

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

No direct effects

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

Potential for broad public support, particularly at local level; would require the identification of sustainable funding, which may require changes to laws and regulations governing the generation of funds for flood system maintenance and repairs

Technical Considerations:*Redirected Hydraulic Impacts?*

None

Residual Risk?

No direct effect on residual risk

Climate Change Adaptability:

No direct effects

Urban, Small Community, and Non-Urban Considerations:

No specific considerations identified

Regional Applicability:

Applicable to all regions.

Integration with Other Programs:

References:

Agricultural Stewardship White Paper; California Floodplain Management Task Force, 2002, Final Recommendations Report; USACE 2001 Sacramento and San Joaquin River Basins Comprehensive Study; Agricultural Stewardship Summary; RCR;

DRAFT Management Action Evaluation**Management Action Title:**

MA-071

Improve evacuation planning.

Description:*Problem:*

Few local governments have prepared flood-specific evacuation plans, either locally or regionally. Some local jurisdictions have produced flood evacuation plans that identify the range of involved agencies and personnel, notification procedures, public and private transportation options, evacuation routes, and other related information for flood emergencies (City of Sacramento, 2008). Others integrate these plans into their overall emergency plans (Shasta County, 2000). Only a few jurisdictions have distilled flood emergency preparedness and evacuation information into succinct summaries easily accessible and understandable by the public (Tehama County, 2009; San Joaquin County, 2009).

Desired Outcome:

Increased coordination across emergency response agencies and greater public awareness of proper evacuation procedures to reduce loss of life during severe flood events.

Methodology:

Produce local flood evacuation plans that identify the range of involved agencies and personnel, notification procedures, public and private transportation options, and evacuation routes/procedures that are easily accessible and understood by the public. These plans should also consider ingress routes for flood fighters while an evacuation is occurring.

CVFPP Goals*Contributes Significantly to:*

Improve Institutional Support

Potentially Contributes to (Check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Improve Flood Risk Management | <input checked="" type="checkbox"/> Improve Institutional Support |
| <input type="checkbox"/> Improve Operation and Maintenance | <input type="checkbox"/> Promote Multi-Benefit Projects |
| <input type="checkbox"/> Promote Ecosystem Functions | |

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation.

Advantages:

- Low Capital Cost.
- Works well with other MAs.
- Likely to be politically popular.

Disadvantages:

- Limited funding and institutional capacity from small and non-urban communities to implement MA.

Economic Considerations:*Capital Cost? (High, Medium, Low)*

Low. Policy MAs will tend to have a substantially lower capital cost than other MAs which involve physical construction.

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

No significant change.

Potential for Cost-Sharing?

Yes. Potential cost-sharing with LMAs and local governments for evacuation planning and training; federal cost sharing is uncertain under current federal grant/funding opportunities.

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

Decrease. Evacuation planning would improve coordination across all emergency response staff involved in evacuation. Improved public awareness of evacuation procedures would also reduce the need for sweeping by emergency response staff.

Flood fighting? (Increase, Decrease, or No Significant Change)

No direct effect, but consideration of ingress routes for flood fighting (as part of evacuating planning) could facilitate emergency response.

Effect on Damage to Critical Public Infrastructure?

No significant change.

Effect on Floodplain and Economic Development?

No significant change.

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Potential decrease. Improved evacuation planning could reduce consequences of flooding but will not reduce the frequency of potential flood threats.

Environmental Considerations:

Rehabilitate key physical processes and ecological functions?

None

Adverse Environmental Impact?

None

Permitting Considerations?

None

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:

Public Safety?

Significantly improves public safety by preventing loss of life through improved emergency response coordination and more efficient evacuation during severe floods.

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

None.

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

Likely to be politically acceptable at the State and local levels. Some smaller local governments may be limited in their funding and institutional capacity to create evacuation plans without additional assistance.

Technical Considerations:

Redirected Hydraulic Impacts?

None.

Residual Risk?

Reduces residual risk. Creating and coordinating evacuation procedures reduces the consequences of flooding (potential damages to life and property).

Climate Change Adaptability:

Unrelated to hydrologic and biological adaptability.

Urban, Small Community, and Non-Urban Considerations:

Although Small or non-urban communities would likely benefit the most from evacuation plans, they also have limited funding and institutional capacity to establish them.

Regional Applicability:

All regions.

Integration with Other Programs:

References:

City of Sacramento, 2008; Shasta County, 2000; Tehama County, 2009; San Joaquin County, 2009;

DRAFT Management Action Evaluation

Management Action Title: MA-072

Develop a post-flood recovery plan for the Central Valley and Delta to improve the coordination and efficiency of post-flood public assistance.

Description:

Problem:

Many existing Central Valley post-flood recovery plans and programs leave room for improvement in clarity and integration. The variability in flood emergency planning throughout the Central Valley’s communities is mirrored in the range of comprehensive post-flood recovery plans documented. Where they exist, these plans are generally driven by the eligibility requirements of the Stafford Act. Debris removal and economic recovery operations are often conducted well after floods, but often only to the extent that they are eligible for federal reimbursement. Coordinating post-flood recovery activities can be difficult because the range of agencies with legal or voluntary responsibilities for disaster recovery often cross jurisdictions and levels of government.

Desired Outcome:

Development of a simple, direct, integrated plan of action for post-flood recovery would reduce confusion, clarify roles and responsibilities, and facilitate disaster recovery throughout the Central Valley and Delta.

Methodology:

It is more likely that post-flood recovery actions would be completed if the responsible person or agency is clearly identified prior to the occurrence of a disaster. A post-flood recovery plan should address levee repair, flood water evacuation, and property and infrastructure rehabilitation. This plan should cover Central Valley communities with greater than 1,000 people and legacy communities in the Delta.

CVFPP Goals

Contributes Significantly to: Improve Institutional Support

Potentially Contributes to (Check all that apply):

- ☒ Improve Flood Risk Management
- ☒ Improve Institutional Support
- ☒ Improve Operation and Maintenance
- ☐ Promote Multi-Benefit Projects
- ☐ Promote Ecosystem Functions

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation. It may not be practical to develop ONE post-flood recovery plan for the Central Valley and Delta. (May need to consider providing "guidelines" and funding for plan development. However, that would likely reduce the effectiveness of this MA.) Should investigate combining with other consolidated MAs in this category. State participation in this MA (funding, coordination, planning assistance) should not constitute State responsibility for implementation activities and their effects.

Advantages:

- Low capital cost.
- Reduces maintenance and repair costs for LMAs.
- Increases likelihood of completion of post-flood recovery actions.
- Improves effectiveness of recovery efforts and provides direction during post-flood confusion.

Disadvantages:

- Some smaller local governments may be limited in their funding and institutional capacity to develop and implement post-flood recovery plans.

Economic Considerations:

Capital Cost? (High, Medium, Low)

Low. Policy MAs tend to have a substantially lower capital cost than other MAs which involve physical construction. Capital investments include funding for multiagency, multijurisdictional planning and development of post-flood recovery plans.

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

Decrease. Increased post-flood recovery planning prior to flood events reduces maintenance and repair costs for LMAs.

Potential for Cost-Sharing?

Yes. Potential cost-sharing with LMAs and local governments for post-flood recovery planning. Federal cost-sharing is uncertain under current federal grant/funding opportunities. Potential for State cost-sharing under existing grant programs.

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

Decrease. Improved post-flood recovery planning increases the efficiency and effectiveness of post-flood recovery efforts.

Flood fighting? (Increase, Decrease, or No Significant Change)

No significant change.

Effect on Damage to Critical Public Infrastructure?

Decrease. Post-flood recovery planning establishes roles and responsibilities for rehabilitation, repair, or replacement of critical public infrastructure (e.g., hospitals, communication centers, utilities, schools, government operations, transportation routes, etc.) damaged by flooding. Improvements in floodwater evacuation also help protect critical public infrastructure.

Effect on Floodplain and Economic Development?

No significant change.

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Decrease. Improved post-flood recovery planning at the local level reduces the need for State government intervention, thus reducing State responsibility.

Environmental Considerations:

Rehabilitate key physical processes and ecological functions?

None

Adverse Environmental Impact?

None

Permitting Considerations?

None

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:

Public Safety?

Improvements in post-flood levee repair, floodwater evacuation, and rehabilitation of critical public infrastructure all improve public safety.

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

Faster repair and public re-opening of recreation lands and facilities damaged by floods.

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

Politically and publicly acceptable at State, regional, and local levels. Institutionally, there may be difficulties with ONE plan for the entire area (unless there is resolution of inconsistencies related to which agency is responsible for what activity in sub-areas). Some smaller local governments may be limited in their funding and institutional capacity to develop post-flood

recovery plans.

Technical Considerations:

Redirected Hydraulic Impacts?

None.

Residual Risk?

No reduction in residual risk.

Climate Change Adaptability:

Unrelated to hydrologic and biological adaptability.

Urban, Small Community, and Non-Urban Considerations:

Small or non-urban communities may have limited funding and institutional capacity to create post-flood recovery plans.

Regional Applicability:

All regions.

Integration with Other Programs:

Delta Flood Preparedness, Response and Recovery Project (HAFOO)

References:

USACE 2001 Sacramento and San Joaquin River Basins Comprehensive Study; Agricultural Stewardship White Paper; Agricultural Stewardship Summary; Boyle & Associates, 2008. Madera County Integrated Regional Water Management Plan;

DRAFT Management Action Evaluation

Management Action Title:

MA-073

Streamline the post-flood permitting process for flood system repairs.

Description:
Problem:

Obtaining permits for post-flood system repairs involves coordination with multiple agencies that can exceed the budgets of smaller levee maintaining agencies. With multiple permits required for most maintenance and mitigation activities, and no central location for coordinating the process, obtaining the necessary permits often takes longer than the actual repairs.

Desired Outcome:

Reduced costs and time needed to complete system repairs can reduce future flood risk.

Methodology:

The process of obtaining permits for the repair of damaged structures should be streamlined and consolidated, to save time and money. Federal and State agencies involved in the permitting process should coordinate to develop a consistent permitting program that is easy to understand and comply with at the local level. Permit applications submitted to Federal and State agencies through the permitting program should have priority in the review process, allowing permits to be issued in a timely manner so that repairs of damaged levees could begin shortly after a flood event. In addition, the Board could establish a process for issuing a blanket permit for recovery type work following a high water event.

CVFPP Goals
Contributes Significantly to:

Improve Institutional Support

Potentially Contributes to (Check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> Improve Flood Risk Management
<input checked="" type="checkbox"/> Improve Operation and Maintenance
<input type="checkbox"/> Promote Ecosystem Functions | <input checked="" type="checkbox"/> Improve Institutional Support
<input type="checkbox"/> Promote Multi-Benefit Projects |
|--|--|

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation. Should investigate combining with other consolidated MAs in this category. State participation in this MA (funding, coordination, planning assistance) should not constitute State responsibility for implementation activities and their effects.

Advantages:

- Reduces O&M costs for LMAs, possibly freeing up funding for more system repairs.
- Reduces the time required to begin post-flood repairs.

Disadvantages:

- Potential resistance from permitting agencies.

Economic Considerations:
Capital Cost? (High, Medium, Low)

Medium. While policy MAs tend to have a substantially lower capital cost than other MAs which involve physical construction, significant interagency coordination (on the State and federal levels) is required to streamline the permitting process for flood-system repairs.

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

Decrease. Obtaining permits represents a significant cost of operation, maintenance and repair activities. Streamlining the permitting process should reduce costs for LMAs.

Potential for Cost-Sharing?

Yes, potential for federal cost-sharing.

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

If streamlining the permitting process results in more post-flood repairs, this will reduce the frequency of flooding and thereby reduce the long-term costs of emergency response and recovery.

Flood fighting? (Increase, Decrease, or No Significant Change)

If streamlining the permitting process results in more post-flood repairs, this will reduce the frequency of flooding and thereby reduce the long-term costs of emergency response and recovery.

Effect on Damage to Critical Public Infrastructure?

Region specific.

Effect on Floodplain and Economic Development?

No direct effects; however, if the repairs results in reducing the frequency of flooding and increasing the level of flood protection, floodplain development may be encouraged.

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Potential decrease in State flood responsibility due to the repairs reducing the frequency of flooding.

Environmental Considerations:

Rehabilitate key physical processes and ecological functions?

None

Adverse Environmental Impact?

None

Permitting Considerations?

None

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:

Public Safety?

If streamlining the permitting process results in more post-flood repairs, public safety is improved by reducing the frequency of future flooding.

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

None.

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

Streamlining the permitting process should be very popular with LMAs because it would reduce the time and funding required to obtain permits. Likely to be politically and publicly acceptable. State and federal permitting agencies may oppose this effort if it appears to render permit requirements less stringent or infringe upon their authority or jurisdiction.

Technical Considerations:

Redirected Hydraulic Impacts?

None.

Residual Risk?

If streamlining the permitting process results in more post-flood repairs, the frequency of future flooding and therefore the residual risk would be reduced.

Climate Change Adaptability:

Unrelated to hydrologic and biological adaptability.

Urban, Small Community, and Non-Urban Considerations:

Small and non-urban communities would likely benefit the most from streamlining the permitting process because they tend to have less staff and funding available.

Regional Applicability:

All regions.

Integration with Other Programs:

Sacramento River Bank Protection Project (FMO), Sacramento-San Joaquin Erosion Repairs Program (FMO), Levee Stability Program (FMO)

References:

USACE 2001 Sacramento and San Joaquin River Basins Comprehensive Study;

DRAFT Management Action Evaluation**Management Action Title:**

MA-081

Purchase and position flood fighting materials in preparation for a flood event.

Description:*Problem:*

During a flood event, considerable quantities of floodfighting materials (e.g., rock, sandbags, lumber, sheetpiles, other supplies) are often needed with minimal advance notice. Waiting until an event occurs to locate, purchase, and transport materials (mobilizing barges or other transportation) can slow the response to a flood emergency, especially one that requires more than basic sandbagging and levee patrol. In addition, during an event, the ability of local agencies to obtain loans to support purchasing and positioning materials is limited because banks are reluctant to lend when the tax base used to repay those loans is itself at risk.

Desired Outcome:

Purchasing and positioning floodfighting materials prior to a flood event can reduce emergency costs and damages associated with a lack of timely access to those materials.

Methodology:

Floodfighting materials could be purchased in advance of flood events and stockpiled at materials storage and transfer facilities. These material storage and transfer facilities could be located both locally (for immediate access) and regionally (near barge loading facilities or protected transportation corridors) and stocked based on assumptions related to the magnitude of flood event for which a response is desired, miles of levees supported, etc. Stockpiles could be managed by both DWR and local agencies to provide access to bulk materials (rock, lumber, sheetpile) and portable materials (sandbags, plastic, etc.). Development of mutual aid agreements that facilitate the coordination and sharing of floodfighting materials could also be facilitated to leverage available funding (state, federal, regional, local) and supply resources.

CVFPP Goals*Contributes Significantly to:*

Improve Institutional Support

Potentially Contributes to (Check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Improve Flood Risk Management | <input type="checkbox"/> Improve Institutional Support |
| <input type="checkbox"/> Improve Operation and Maintenance | <input type="checkbox"/> Promote Multi-Benefit Projects |
| <input checked="" type="checkbox"/> Promote Ecosystem Functions | |

Recommendations (Retained/Not Retained/Requires Further Evaluation):

Retain for further evaluation. Should investigate combining with other consolidated MAs in this category. State participation in this MA (funding, coordination, planning assistance) should not constitute State responsibility for the materials, their upkeep, or their use.

Advantages:

- Greatly increases availability and accessibility of flood fighting materials, especially for communities that lack easy access to these materials.
- DWR has implemented similar existing programs in the past that this MA could build off of.

Disadvantages:

- High capital costs. Long-term storage and upkeep costs.

Economic Considerations:*Capital Cost? (High, Medium, Low)*

High. Majority of costs are upfront capital expenditures.

Annual Cost to Operate/Maintain/Repair? (Increase, Decrease, or No Change)

Slight increase related to storage and upkeep of floodfighting materials.

Potential for Cost-Sharing?

Yes. Potential cost-sharing with local, regional, state, and federal agencies for purchase and storage of materials.

Emergency Response and Recovery Costs? (Increase, Decrease, or No Significant Change)

Decrease. Access to and effective use of floodfighting materials may reduce potential for damages and need for recovery.

Flood fighting? (Increase, Decrease, or No Significant Change)

Decrease. Preurchased flood fight supplies reduce the need for purchases made with emergency loans. Depending on the storage location, transporting the materials may still incur some costs.

Effect on Damage to Critical Public Infrastructure?

Decrease, in some cases. Ensuring the accessibility and availability of floodfighting materials may hold off a flood or allow responders to prevent damage where an egress route occurs on top of a levee, for instance.

Effect on Floodplain and Economic Development?

No significant change.

Effect on State Flood Responsibility? (Increase, Decrease, or No Significant Change)

Potential decrease. Accessibility and availability of materials improve floodfighting and thereby reduce the magnitude and frequency of flooding.

Environmental Considerations:*Rehabilitate key physical processes and ecological functions?*

None

Adverse Environmental Impact?

None

Permitting Considerations?

None

Opportunity to Reduce the Adverse Environmental Impacts Associated With Operation, Ongoing Maintenance, and Repairs of FM System?

None

Social Considerations:*Public Safety?*

Potentially improves public safety by improving ability to respond to threats to levee stability, thus reducing chance of levee failure.

Potential to Provide Other Benefits (Water Supply, Recreation, or Open Space)?

Improved floodfighting may protect nearby resources.

Likelihood of Implementation (Politically, Institutionally, and Culturally Acceptable)?

High capital cost may reduce political and institutional support .

Technical Considerations:*Redirected Hydraulic Impacts?*

Potential for redirected impacts (if not implemented in a coordinated manner and systemwide).

Residual Risk?

Reduces residual risk by enhancing responders' ability to quickly react to threats to levee stability, thus reducing chance of levee failures.

Climate Change Adaptability:

Adaptable to climate change, as floodfighting materials positioning could take into account the future impacts of climate change.

Urban, Small Community, and Non-Urban Considerations:

Especially important for small and non-urban communities whose LMAs may have the most difficulty procuring supplies under current conditions.

Regional Applicability:

All regions, though storing or transporting floodfighting materials may be easier in some regions where waterways could accommodate barges (Upper Sac, Lower Sac, Delta) than in others where waterways are harder to navigate (Upper San Joaquin).

Integration with Other Programs:

Flood Fight Materials and Equipment Storage Program (HAFOO)

References:

Delta Risk Management Strategy;